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27. NEW RECORDS OF TWO SPECIES OF SIMPLE ASCIDIANS –  
*MICROCOSMUS PUPA* (SAVIGNY, 1816) AND *MICROCOSMUS SQUAMIGER* HARTMEYER &  
 MICHAELSEN, 1928 – FROM INDIAN SEAS<sup>1</sup>

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The occurrence of two simple ascidians of the genus *Microcosmus* – *Microcosmus pupa* (Savigny, 1816) and *Microcosmus squamiger* Hartmeyer & Michaelsen 1928 is reported for the first time from Tuticorin coast of India. A review of literature on ascidian systematics reveals that three species of the genus *Microcosmus*, namely *M. curvus* Tokioka, 1954; *M. exasperatus* Heller, 1878 and *M. helleri* Herdman, 1882 have been reported from the east coast of India (Oka 1915; Das 1945; Renganathan 1983, 1986; Krishnan *et al.* 1989). An analysis of the ascidian biofoulants at the pearl oyster farm of CMFRI (T) (8° 48' N; 78° 11' E) adds two more species. The specimens studied have been deposited in the ascidian collections of the museum of the Department of Zoology, V.O. Chidambaram College, Tuticorin, Regn. No. *Microcosmus pupa* (VOCMAS72); *Microcosmus squamiger* (VOCMAS16, AS163, AS185, AS190, AS194, AS207, AS223, AS1467).

**Taxonomy:** Class: Ascidiacea; Order: Pleurogona; Suborder: Stolidobranchia; Family: Pyuridae; Genus: *Microcosmus*

*Microcosmus pupa* (Savigny, 1816)

**Distribution:** New record: Tuticorin. This species has been previously reported from Red Sea (Savigny 1816; Michaelsen 1919), Australia (Kott 1985).

### Description

**External appearance:** Individuals upright, 6 cm long and 3 cm wide. Branchial siphon short, terminal. Atrial siphon lines halfway down the dorsal side directed laterally. They are fixed by their rounded posterior end. Test hard, thin, but tough, with wrinkles, especially in the anterior region. Live specimens dark pinkish orange to reddish brown. On preservation the colour fades to light orange. Siphonal spines 0.05 mm long and pointed. Base of the spine half the length of the spine. Tip of spine narrow, sharp and only slightly curved.

**Internal structure:** (Fig. 1) Body wall adheres closely to the test. There are 15 medium sized branchial tentacles alternating with rudimentary ones. The tentacles are not bushy. The primary branches are small and the secondary branches minute. The dorsal tubercle is a cushion with a U-shaped opening with both horns coiled 1½ times. Peritubercular area is U-shaped, filled by the dorsal tubercle. Dorsal lamina is long and smooth. There are nine broad overlapping branchial folds on the right, and eight on the left. Four stigmata in a mesh. The internal longitudinal vessels are arranged according to the formula.

E1(12) 2(18) 3(17) 4(24) 4(26) 4(30) 4(28) 3(26)  
 3(24)DL2(24) 4(28)4(30)4(26)3(24)3(20)2(18)2(12)0E

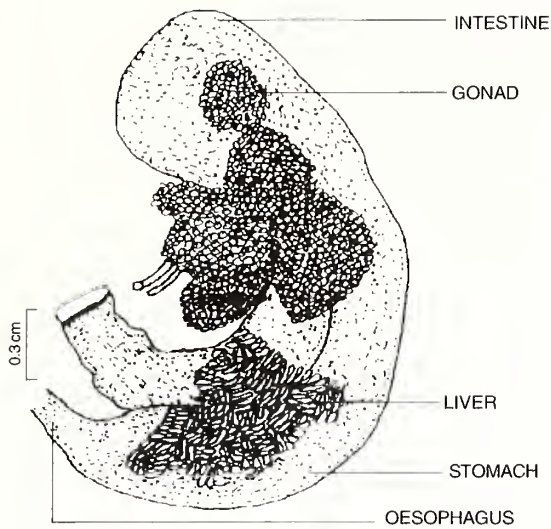


Fig. 1: *Microcosmus pupa*, gut and gonad

Internal longitudinal vessels are crowded (12-30) on the fold and only (1-4) in the interspace. The gut loop is narrow, deeply curved to form a J-shape. The rectum is curved anteriorly. Liver is compact with parallel folds arranged in groups on the gut wall. Anal border with faint bilobed margin. Gonad is massive, subdivided into 3 lobes. The proximal end of the left gonad is enclosed in the gut loop, the remaining part crosses over the descending limb of the gut loop. Testis follicles present in the centre of mesial surface of the ovary and spread over the gut loop.

**Remarks:** The presence of the siphonal spines with their almost completely closed bases, narrow flanges, the very numerous male follicles that form an extensive sheet over the body wall and gut loop are distinctive characters described by Michaelsen (1919) for specimens from the Red Sea. All these characters were observed in the present specimen also. However, the present specimen differs from the description of *Microcosmus pupa* Kott (1985) in having shorter siphonal spines, opening of the neural gland coiled more than once. Nine branchial folds on the right and eight on the left, and greater number of internal longitudinal vessels on the folds.

*Microcosmus squamiger* Hartmeyer & Michaelsen, 1928

**Distribution:** New record – Tuticorin. This species has been previously reported from Australia (Michaelsen 1908; Hartmeyer and Michaelsen 1928; Kott 1972, 1976, 1985), Red Sea (Michaelsen 1918).

**Description**

**External appearance:** Individuals vary in their size and shape. Generally rounded or egg-shaped, 3 cm long and 3 cm

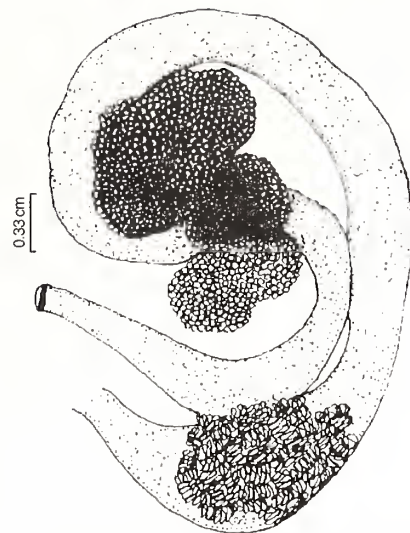


Fig. 2: *Microcosmus squamiger*, gut and gonad

wide. They occur in large aggregations and are upright, attached to the substratum by their posterior end. The surface of the test has faint wrinkles and creases, and is reddish brown. The colour fades slightly in preservation. The test is leathery and tough, but not brittle. The inner surface of the test is light purple, and fades on preservation. The apertures are at the anterior end situated at opposite ends directed away from one another. In well narcotized specimens the siphons are conspicuous. The terminal part of the siphon lining has small overlapping curved scales with rounded borders 0.01 to 0.02 mm long.

**Internal structure:** (Fig. 2) In living individuals the body wall is reddish purple, but on preservation the colour is lost. There are both circular and longitudinal muscles. The siphon lining has red stripes in live specimens. The base of the branchial siphon has 4 pockets, which form a cuspid valve. Branchial tentacles are strong. Dorsal tubercle is a large cushion, which completely fills the peritubercular area with a double spiral cone as aperture. Dorsal ganglion is long and lies behind the dorsal tubercle. Dorsal lamina is long. Branchial sac has 8-9 broad overlapping branchial folds, with 17-25 internal longitudinal branchial vessels crowded on the folds and only 2-3 in the interspace. There are 7-10 stigmata in a mesh. The gut forms a narrow curved loop with an open pole, enclosing the proximal part of the gonad. Liver is compact with parallel lamella, orange in living specimens, but dull green on preservation. Gonads are divided into 3 blocks joined by a median common duct. The left gonad crosses over the descending limb of the gut loop, from the pole of the gut loop, to extend towards the atrial aperture.

**Remarks:** This species may appear to resemble *Microcosmus exasperatus* in the external features, such as

its tough, leathery, purple-red pigmented test, but differs in the nature of the siphonal armature and the more numerous stigmata in each mesh. It has all characters described by Hartmeyer and Michaelsen (1928), and Kott (1985).

KEY TO THE SPECIES OF *MICROCOSMUS* RECORDED FROM INDIA

1. Siphonal armature absent ..... *M. helleri*
- Siphonal armature present ..... 2
2. Siphonal armature rounded scales ..... *M. squamiger*
- Siphonal armature spines ..... 3
3. Branchial folds 5 on each side, with only 10 internal longitudinal vessels on folds ..... *M. curvus*

- Branchial folds more than 5, with more than 20 internal longitudinal vessels on folds ..... 4
- 4. Siphonal armature flattened spines ..... *M. exasperatus*
- Siphonal armature needle-like spines ..... *M. pupa*

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## 28. NEW RECORD OF WOLF SPIDERS (ARANEAE: LYCOSIDAE) OF THE GENUS *HIPPASA* SIMON FROM BANGLADESH<sup>1</sup>

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### Introduction

Wolf spiders (Family Lycosidae) are one of the common ground dwelling predators of crop-fields and other habitats. In Bangladesh, works on these spiders are scarce except a few ones are (Chowdhury and Nagari 1981; Chowdhury and Pal 1984; Biswas *et al.* 1993; Okuma *et al.* 1993; Begum and Biswas 1997) found. But in the neighbouring countries like-

India (Pocock 1900; Gravely 1924; Tikader 1970, 1977a, 1977b; Tikader and Biswas 1981; Tikader and Malhotra 1976, 1980; Tikader and Mukerjee 1971), Burma (now Myanmar) (Thorell 1895), Pakistan (Dyal 1935), China (Chen and Zhang 1991; Zhao 1993; Song *et al.* 1999), Japan (Tanaka 1985; Yaginuma 1986) where several contributions are made on this group.